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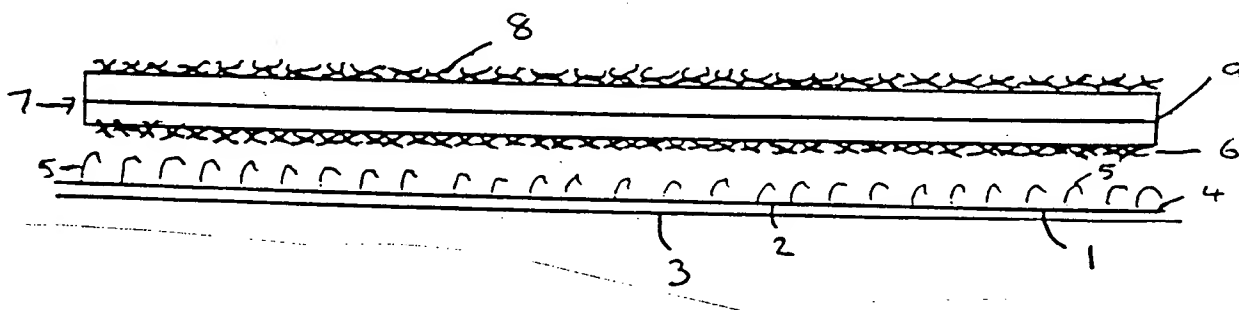
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(54) Title: SURFACE COVERING SYSTEM



(57) Abstract

The system comprises two parts, tape (1) having a multiplicity of hook-like fibrous projections (5) and tile material (7). The tape is secured to, for example, a floor, so as to cover no more than 60% of the surface. The tiles have a plane of symmetry (9) and are fully reversible; both top and bottom layers (8, 6) are fibrous and are capable of engagement with the fibrous projections (5).

Surface Covering System

The present invention is concerned with a surface covering system, and a method of applying a surface covering (such as a floor covering) using such a system.

5 Floor coverings with a textile surface are generally referred to as carpets or rugs; carpets are frequently used domestically and in offices and the like in the form of tiles. It is necessary to secure such tiles to a floor by means of , for
10 example, adhesive or staples, and/or to provide the tiles with sufficient weight per unit area to ensure that they stay in place and do not migrate substantially.

15 Releasable carpet tiles (that is, carpet tiles which can be fixed in position, released at will and replaced or relocated) are also known. For example, U.K. Patent Specification 1546901 discloses a releasable carpet tile, the underside of which is substantially covered by one surface of a "velvet-
20 type fastening system" (that is a system comprising a

fabric having a raised pile in the form of threads, the ends of at least some of which are provided with material-engaging means, and a "loopy fabric" having loops engageable by the material-engaging means just mentioned). U.S. patent 3866267 discloses a similar releasable tile; in this case the fastening system is provided around the edges only of the tiles (rather than substantially covering the underside).

Suitable velvet-type fasteners are available commercially under the trade mark "Velcro". While this type of fastener is very satisfactory for securing small areas together (for example, as in clothing), it becomes very expensive when used for large areas, as in carpets. The provision of the fastener around the edge of the tile only (as in U.S. patent 3866267) does not satisfactorily solve the problem, since if the tile is conventional (apart from the fastener around the edges) the body portion of the tile has a tendency to undesirable movement when the tile is in place.

We have now developed an improved and simplified surface covering system which can be arranged to have dimensional stability with reduced weight per unit area compared with known carpet tiles, and which, unlike any prior art tiling system of which we are aware, employs completely reversible tiles.

According to the present invention, there is provided a surface covering system comprising (a) a material having a multiplicity of fibrous projections, said material being secured to the surface of a rigid support such that said fibrous projections are present at discrete areas constituting no more than 60% by area of said surface; and (b) tiles each comprising a bottom layer of textile material releasably engageable by said material having a multiplicity of fibrous projections, and a top layer of textile material bonded to said bottom layer, characterized in that said tiles are reversible such that each top layer can be engaged by said material having a multiplicity of fibrous projections on reversal of a respective tile.

The present invention further comprises a method of applying a surface covering, employing a surface covering system according to the invention, which comprises securing the above-mentioned material (a) to the surface of the rigid support, and disposing the tiles over the surface such that the bottom layer of some at least of the tiles are secured to said material (a) by means of the latter's fibrous projections.

The surface covering system according to the invention is primarily intended for use as covering for a floor of a building; however, it may be used for other purposes, for example, for covering vehicle flooring or as a wall covering.

When reference is made to the bottom layer of the tile, it should be understood that the tile is reversible, so that the top and bottom are interchangeable.

It is not always necessary for every tile to be secured by the material having a multiplicity of fibrous projections; in some cases, such material need only be present in high traffic areas. Of the tiles which are secured, the material having a multiplicity of fibrous projections is preferably only in contact with a relatively small area of the bottom layer of the respective tile. It is generally preferred to employ the material having a multiplicity of fibrous projections in such a way that every corner of every tile is engaged by such material.

The material having a multiplicity of fibrous projections is preferably in the form of a tape secured at intervals to the surface of the rigid support. Such a tape may be secured to the surface of the rigid support in the form of strips along edges of the tiles; preferably along the edge of each and every tile. In an alternative arrangement, the material having a multiplicity of fibrous projections is secured to the support underneath

a plurality of adjacent tiles. For example, when the tiles are square or rectangular, the material having a plurality of fibrous projections may be disposed beneath four adjacent corners of the tiles.

5 It is particularly preferred that 4 to 20% of the bottom layer should be in contact with the material having a multiplicity of fibrous projections. The surface of the top and bottom layers may be plain or patterned; preferably the top layer has a different colour and/or
10 pattern to that of the bottom layer so that the appearance of the surface covering system may be changed by reversing selected ones (or all) of the tiles present on the surface.

The top layer and the bottom layer are each preferably of washable textile material, such as poly-
15 propylene, which is preferably in the form of a non-woven (e.g. needle-punched) fabric. The total thickness of the tile is preferably 4 to 20 ml; the weight per unit area of the tile is preferably 100 to 500g per metre (for example, 150 to 400g per square metre).

20 In one embodiment of the invention, the multiplicity of fibrous projections constitutes at least the entire periphery of the above-mentioned material (a); the latter may comprise a support-engaging fabric layer secured to a tile-engaging layer having the
25 multiplicity of fibrous projections.

The material having a multiplicity of fibrous projections may have projections in the form of hooks or loops; such projections must be capable of engaging both top and bottom surfaces of the tiles so as to releasably
30 secure a respective tile to the support. An example of a suitable material having a multiplicity of fibrous projections is one of the two complementary parts of the material commercially available under the trade mark
35 "Velcro", as described above; such a material is available commercially in the form of a tape.

The tiles used in the surface covering system according to the invention may be square, triangular, rectangular, hexagonal, or other space-filling shape. If part of the surface area covered by the tiles becomes worn or soiled, then the relevant tiles can be removed and either washed, reversed or replaced in the worn or soiled area only.

The present invention will further be described, by way of example, with reference to the accompanying drawings, in which:

Figure 1 is a schematic cross-section of a surface covering system according to the invention (the parts are shown slightly separated for clarity);

Figure 2 is a schematic plan view of a first embodiment of a surface covering system according to the invention; and

Figure 3 is a schematic plan view of a second embodiment of a surface covering system according to the invention.

Referring to Figure 1, there is shown an elongate tape 1 having a smooth undersurface 2 secured to a floor 3; the upper surface 4 of the tape has a multiplicity of hook-like fibrous projections 5 along the length thereof.

The fibrous projections 5 engage the fibrous underlayer 6 of a tile 7 which is symmetrical about a horizontal plane of symmetry. The tile 7 has a fibrous upper layer 8 which is equally capable of engaging the fibrous projections 5 on reversal of the tile. The fibrous upper layer 8 is bonded to the fibrous underlayer 6 by means of a bonding layer 9.

Referring to Figure 2, there is shown an array of nine square carpet tiles 10 secured to a floor by means of a grid-pattern of tape 11 (shown by dotted lines) having hook-like projections. The tape 11 is secured along the

underside of the edge of each and every tile 10.

Referr[redacted] to Figure 3, there is s[redacted]n an alternative means of fixing an array of nine carpet tiles 12 by means of crosses 13 of material having hook-like projections. Each cross 13 is disposed beneath adjacent corners of four tiles.

Claims

1. A surface covering system comprising
 - (a) a material having a multiplicity of fibrous projections, said material being secured to the surface of a rigid support such that said fibrous projections are present at discrete areas constituting no more than 60% of said surface; and
 - (b) tiles each comprising a bottom layer of textile material releasably engageable by said material having a multiplicity of fibrous projections, and a top layer of textile material bonded to said bottom layer, characterized in that said tiles are reversible such that each top layer can be engaged by said material having a multiplicity of fibrous projections on reversal of a respective tile.
2. A surface covering system according to claim 1, characterized in that said top layer has a different colour and/or pattern to that of said bottom layer.
3. A surface covering system according to claim 1 or 2, characterized in that said material having a multiplicity of fibrous projections is in the form of a tape secured at intervals to the surface.
4. A surface covering system according to any of claims 1 to 3, characterized in that said multiplicity of fibrous projections constitutes at least the entire periphery of said material (a).
5. A surface covering system according to any of claims 1 to 4, characterized in that said material (a) comprises a support - engaging fabric layer secured to a tile-engaging layer having said multiplicity of fibrous projections.
6. A surface covering system according to any of claims 1 to 5, characterized in that each tile has a weight per unit area of 100 to 500 grams per square metre.
7. A surface covering system according to any of claims 1 to 6, characterized in that each tile is of washable textile material.

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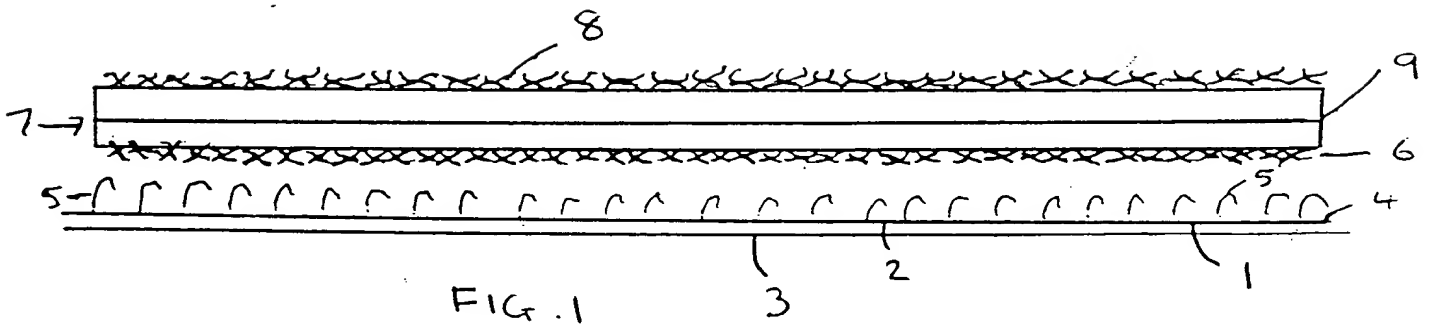
8. A surface covering system according to any of claims 1 to 7, characterized in that said support is a floor of a building.

5 9. A method of applying a surface covering employing a surface covering system according to any of claims 1 to 8, which comprises securing said material (a) to said surface of said support, and disposing said tiles over the surface such that the bottom layers of some at least of said tiles are secured to said material (a) by means of said fibrous
10 projections.

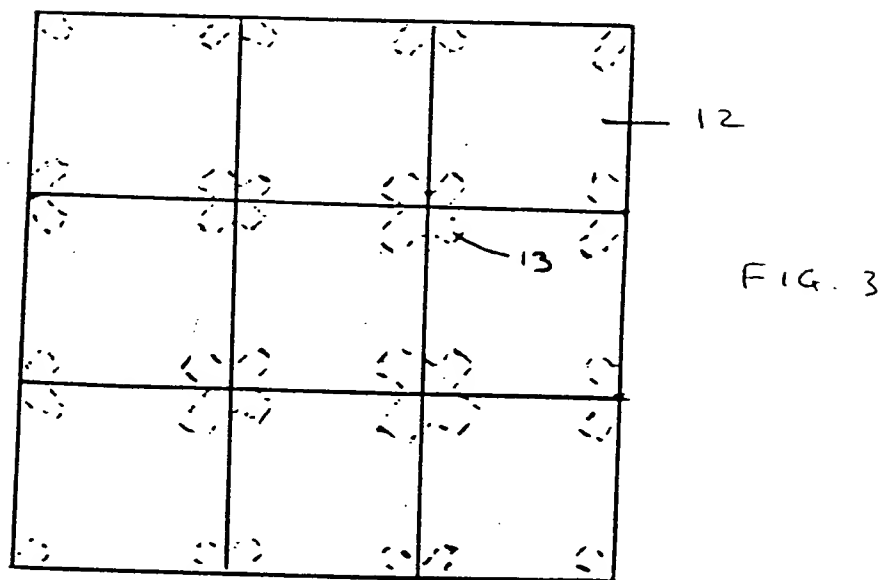
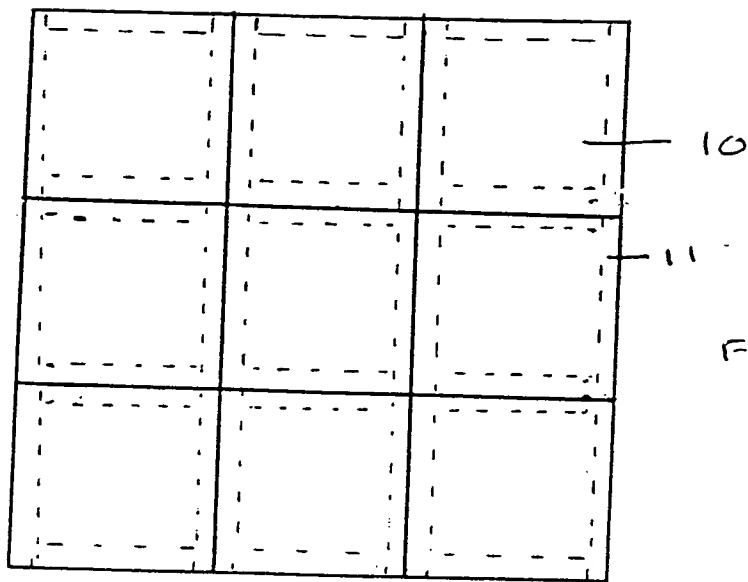
10. A method according to claim 9, characterized in that said material (a) is located under every corner of every tile.

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INTERNATIONAL SEARCH REPORT

International Application No. PCT/GB 85/00343

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) ⁴

According to International Patent Classification (IPC) or to both National Classification and IPC

IPC⁴: E 04 F 15/02; A 47 G 27/02

II. FIELDS SEARCHED

Minimum Documentation Searched ⁷

Classification System

Classification Symbols

IPC⁴

E 04 F
A 47 G

Documentation Searched other than Minimum Documentation
to the Extent that such Documents are Included in the Fields Searched ⁸

III. DOCUMENTS CONSIDERED TO BE RELEVANT ⁹

Category ¹⁰	Citation of Document, ¹¹ with indication, where appropriate, of the relevant passages ¹²	Relevant to Claim No. ¹³
Y	FR, A, 1599030 (VELCRO FRANCE) 21 August 1970, see page 1, lines 21-22; page 1, line 27- page 2, line 21; figure	1,2,3,4,5, 7,8,9,10
Y	FR, A, 1584059 (KLUG) 12 December 1969, see page 2, line 40 - page 4, line 1; figure	1,2,3,5,8, 9
Y	US, A, 3862874 (HOPPER et al.) 28 January 1975, see column 1, line 46 - column 2, line 7; column 2, line 35 - column 2, line 59; figures 1-4	4,7
A		1,3,5,8,9
Y	FR, A, 1463584 (RUFFIN) 14 November 1966, see page 3, line 50 - page 4, line 7; figures 5-8	10

* Special categories of cited documents: ¹⁰

"A" document defining the general state of the art which is not considered to be of particular relevance

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"P" document published prior to the international filing date but later than the priority date claimed

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"X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step

"Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"Z" document member of the same patent family

IV. CERTIFICATION

Date of the Actual Completion of the International Search

11th October 1985

Date of Mailing of this International Search Report

04 NOV 1985

International Searching Authority

EUROPEAN PATENT OFFICE

Signature of Authorized Officer

G.L.M. Hagenberg

INTERNATIONAL APPLICATION NO.

PCT/GB /00343 (SA 10264)

This Annex lists the patent family members relating to the patent documents cited in the above-mentioned international search report. The members are as contained in the European Patent Office EDP file on 23/10/85

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Patent document cited in search report	Publication date	Patent family member(s)	Publication: date
FR-A- 1599030	15/07/70	None	
FR-A- 1584059	12/12/69	None	
US-A- 3862874	28/01/75	None	
FR-A- 1463584		None	

For more details about this annex :
see Official Journal of the European Patent Office, No. 12/82